CLAIMS

We claim:

1. A mine roof bolting system for providing secondary support to the roof of an underground mine comprising:

a) a roof bolt anchored in a pre-drilled hole in the roof of said mine;

b) a base plate with an aperture slightly larger than the diameter of said roof bolt located at the end of said roof bolt such that said mine roof is held in tension by said base plate and said roof bolt;

c) a generally flat plate member with an aperture at or near the center of said plate member, said aperture being slightly larger than the diameter of said roof bolt wherein said plate member is placed immediately against the roof of said mine between said base plate and the mine roof such that said roof bolt extends through said base plate and said plate member, and into said pre-drilled hole in said mine roof;

d) wherein said plate member extends laterally in all directions from said roof bolt and provides support for the mine roof at a location laterally removed from the location of said base plate when said roof bolt and base plate are under tension.

2. The mine roof bolting system of claim 1 wherein upon assembly of said plate member, base plate and roof bolt, said plate member applies an upward force against at least a portion of said mine roof laterally removed from said base plate.

3. The mine roof bolting system of claim 1 wherein said plate member is constructed of steel.

4. The mine roof bolting system of claim 1 wherein said plate member is round.

5. The mine roof bolting system of claim 1 wherein said plate member includes one or more stiffening ridges laterally removed from said aperture.

6. The mine roof bolting system of claim 5 wherein said plate includes a stiffening ridge located near the outer perimeter of said plate.

7. The mine roof bolting system of claim 1 wherein said plate member is slightly convex or bowed with respect to the mine roof.

8. The mine roof bolting system of claim 7 oriented such that when said plate member is held in tension by said base plate and roof bolt, an upward force is applied at the outer edge of said plate member to overcome the convex orientation of the plate member.

9. A device for providing secondary support in an underground mine in conjunction with a conventional roof bolt support system comprised of a base plate held in tension against the roof of said mine by a roof bolt anchored in a pre-drilled hole, said device comprising:

a) a generally flat plate member with an aperture at or near the center of said plate

member, said aperture being slightly larger than said roof bolt;

b) said plate member located immediately against the roof of said mine between said base plate and the mine roof such that said roof bolt extends through said base plate and said plate member, and into said pre-drilled hole in said mine roof;

b) said plate member extending laterally in all directions from said roof bolt and

c) said plate member providing support for said mine roof at a location laterally removed from the location of said base plate.

10. The device of claim 9 wherein upon assembly of said plate member, base plate and roof bolt, said plate member applies an upward force against at least a portion of said mine roof laterally removed from said base plate.

11. The device of claim 9 wherein said plate member is constructed of steel.

12. The device of claim 9 wherein said plate member is round.

13. The device of claim 9 wherein said plate member includes one or more stiffening ridges laterally removed from said aperture.

14. The device of claim 13 wherein said plate includes a stiffening ridge located near the outer perimeter of said plate.

15. The device of claim 9 wherein said plate member is slightly convex with respect to the mine roof such that when said plate member is held in tension by said base plate and roof bolt, an upward force is applied at the outer edge of said plate member to overcome the convex orientation of the plate member.

16. A method for providing primary and secondary roof support in an underground mine, comprising the steps of:

a.) drilling a hole through a roof of the underground mine and into upper level rock strata;

b.) positioning a lateral support member with a central aperture adjacent the roof of said underground mine centered over said hole, said lateral support member providing support for rock strata at a location laterally removed from said hole;

c.) positioning a base plate featuring a central aperture adjacent said lateral support member; and

d.) inserting a roof bolt through said central apertures of said base plate and said lateral support member into said hole, and anchoring said roof bolt by an adhesive or compressive means to secure and support the roof of said underground mine.

17. The method of Claim 16, wherein said support member features a center deflection with respect to the radial edge of said support member such that said support member is slightly convex with respect to the mine roof surface.

18. The method of claim 16 wherein said support member features one or more stiffening

ridges laterally removed from the center of said support member.

19. The method of claim 16 wherein said support member applies an upward force on the roof of the mine at a location laterally removed from the center of said support member.